

Study guide for Chapter 6: Cell Membranes

NB! This should be considered a guide to the aspects of the chapter which are most important and those which have lower priority. However, exam questions within the areas not specifically highlighted are not excluded.

Most important:

- The components and structure of membranes must be known (p 106 –109)
- Passive and active membrane transport processes must be understood (p 114-122)
- The concept of diffusion should be understood and the factors that influence the rate of diffusion must be known. The particular factors that affect rate of diffusion across a membrane must be known (p 114-115).
- The meaning of osmosis and its relevance for cells should be understood (p 115-116).
- The term facilitated diffusion should be understood. The difference between carriers and channel proteins should be explained. (p 117-120).
- The term “active transport” is of great importance. The difference between primary and secondary active transport must also be understood (p 120-122).

Important:

- Know the structure and function of the specialized connections between cells (cell junctions) Opbygning af de specialiserede forbindelser mellem celler (p 111-112).
- The paragraph about endocytosis and exocytosis is important (p 123-124).
- The concept of receptor-mediated endocytosis (p 123-124).
- The role of membranes in transmission of information/signaling, energy transformations and organization of chemical reactions should be understood (p 124-125).

Read briefly: supplementary reading, see below

Remarks about the text book:

s. 113, **Desmosomer:**

The text on page 113 suggests that cell adhesion proteins in desmosomes stretch all the way from one cell, across the space between cells and through both cell membranes. This is misleading. Figure 6.7b (s112) shows the correct situation, that each cell has cell adhesion proteins that bind to each other in the intercellular space.

Supplementary reading

In 1997, half of the Nobel Prize for Chemistry was awarded to the Danish Jens C. Skou for discovery of the sodium-potassium pump (fig. 5.13 in the text book). This was the first membrane transporter to be described. A short, illustrated presentation of his discovery can be seen here: http://nobelprize.org/nobel_prizes/chemistry/laureates/1997/illpres/skou.html

In 2003 The Nobel Prize went to Peter Agre og Roderick MacKinnon, respectively for the discovery of water channels (aquaporins) and for structural and mechanistic studies of ion channels, not least the determination of the three dimensional structure of the potassium channel from the bacterium *Streptomyces lividans*. A popular presentation of their discoveries can be seen here: http://www.nobelprize.org/nobel_prizes/chemistry/laureates/2003/popular.html